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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,309	02/07/2002	Hiroshi Ito	219387US2S	7066
22850	7590	12/30/2003	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.			WONG, EDNA	
1940 DUKE STREET			ART UNIT	
ALEXANDRIA, VA 22314			PAPER NUMBER	
			1753	
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Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/067,309	<b>Applicant(s)</b> ITO, HIROSHI	
	<b>Examiner</b> Edna Wong	<b>Art Unit</b> 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 11-20 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-6 and 9 is/are allowed.
- 6) ☒ Claim(s) 7, 8 and 10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All   b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.  |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                      | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>See Other</u> . | 6) <input checked="" type="checkbox"/> Other: <u>April 25, 2002</u> .       |

### ***Election/Restrictions***

Applicant's election with traverse of Group I, claims **1-10**, in the Provisional Election dated November 24, 2003 is acknowledged. The traversal is on the ground(s) that a search and examination of the entire application would not place a serious burden on the Examiner. This is not found persuasive because searching the method and apparatus are distinct.

For example:

The method recites "moving said mask and said work with respect to each other and emitting said pulsed laser a plurality of times" (from claim 1, lines 7-9).

The apparatus recites "a moving section which moves said mask and said work with respect to each another" (from claim 11, lines 8-9).

The method requires the movement but the apparatus requires structural components capable in performing the movement.

Furthermore, additional searching for the apparatus would have been in classes 117 and 219.

The requirement is still deemed proper and is therefore made FINAL.

### ***Specification***

The disclosure is objected to because of the following informalities:

page 5, line 13, it is unclear what is meant by "pitch of  $\mu\text{m}$ ".

Appropriate correction is required.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

***Claim Rejections - 35 USC § 112***

Claims **7-8 and 10** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7

line 2, "said opening" (singular) lacks antecedent basis.

Claim 8

line 3, "said opening" (singular) lacks antecedent basis.

Claim 10

line 9, "said opening" (singular) lacks antecedent basis.

line 21-22, "said openings formed in positions different from one another on said

mask" lack antecedent basis.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim **10** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Im et al.** (US Patent Application Publication No. 2001/0001745 A1).

Im teaches a laser processing method for irradiating a mask **75** with an opening (= region **91** is in the shape of a stripe) [page 3, [0050]; and Fig. 9A] formed therein with a pulse laser **71** (page 1, [0005]; page 2, [0029]; and Fig. 7), and irradiating a plurality of portions **94** (page 4, [0051]; and Fig. 9D) of a silicon film **82** (page 3, [0050]; and Fig. 8) with said pulse laser transmitted through said plurality of openings at the same time (page 3, [0047]; and Fig. 7), said method comprising:

(a) allowing said mask to have said opening formed in the same direction, and have a width of said opening such that a heat gradient is generated in a laser irradiated region at a time of irradiation of said silicon film with said pulse laser (= heat is induced in the semiconductor material) [page 5, claim 41];

(b) moving said silicon film in one direction at a constant speed and emitting said pulse laser at a constant timing a plurality of times (= repeating steps (c) and (d) in

combination, with the further portion of each step becoming the previous portion for the next step, until the desired crystalline region is formed) [page 5, claim 41];

(c) setting the emission timing of said pulse laser such that said laser irradiated regions disposed adjacent one another on said silicon film are formed by irradiation with said pulse laser transmitted through said opening formed in a position on said mask, and boundaries of said laser irradiated regions disposed adjacent to each other contact at least each other (page 4, [0051]; and Fig. 9F); and

(d) poly-crystallizing said silicon film of said laser irradiated region to form a polycrystalline silicon film having a predetermined or larger particle diameter **93** (pages 3-4, [0050]; and Fig. 9C), and

(e) continuously forming a plurality of said poly-crystallized laser irradiated regions (= repeating steps (c) and (d) in combination, with the further portion of each step becoming the previous portion for the next step, until the desired crystalline region is formed) [page 5, claim 41].

Im does not teach wherein the opening is a plurality of linear openings; wherein a pitch between said openings is formed in a width length and a pitch interval; and wherein said openings are formed in positions different from one another on said mask.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one skilled in the art

would have been motivated to have modified the method of 1m with wherein the opening is a plurality of linear openings; and wherein a pitch between said openings is formed in a width length and a pitch interval because this is well within the skill of the artisan dependent upon the intended use of the silicon film, particularly to the environment to which the film will encounter, which would be most suited for the application of the film, absent evidence to the contrary.

1m teaches that the technique can be used in the manufacture of high-speed liquid crystal display devices, wherein pixel controllers or/and driver circuitry are made in single-crystal or regular/quasi-regular polycrystalline films. Other applications include image sensors, static random-access memories (SRAM), silicon-on-insulator (SOI) devices, and three-dimensional integrated circuit devices (page 1, [0009]).

It appears that the openings would have been dependent upon the pattern for a high-speed liquid crystal display device, an image sensor, and etc.

As to wherein said openings are formed in positions different from one another on said mask, this is well with the skill of the artisan dependent upon the desired pattern to project onto the silicon layer (page 2, [0034]).

### ***Allowable Subject Matter***

The following is a statement of reasons for the indication of allowable subject matter:

Claims **1-9** define over the prior art of record because the prior art does not teach or suggest a laser processing method for irradiating a mask with a plurality of openings formed therein with a pulsed laser, and irradiating a plurality of portions of a work to be processed with said pulse laser transmitted through said plurality of openings at the same time, said method comprising the steps of moving and setting as presently claimed, esp., the step of moving said mask and said work with respect to each other and emitting said pulsed laser a plurality of time.

The prior art does not contain any language that teaches or suggests the above. *Im et al.* do not teach the step of moving said mask and said work with respect to each other. Therefore, a person skilled in the art would not have been motivated to adopt the above conditions, and a prima facie case of obviousness cannot be established.


Claims 7 and 8 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (703) 308-3818. The examiner can normally be reached on Mon-Fri 7:30 am to 5:00 pm, alt. Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (703) 308-3322. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.



Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1495.

  
Edna Wong  
Primary Examiner  
Art Unit 1753

EW  
December 17, 2003